The Cary Arboretum

of The New York Botanical Garden

A Newsletter published for Friends of the Arboretum
by the Public Affairs Department.

September-October, 1982

Box AB
Millbrook, N.Y. 12545

Volume VIII, Number 5

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Yale and Cary Collaborate on Pollution Testing

How does one measure the effects of air pollution on rural ecosystems?

Clues to answering this complex question will begin unraveling during the next three years as scientists from Yale University collaborate with Arboretum Forest Geneticist Dr. David Karnosky on an elaborate outdoor laboratory project.

Funded by the Andrew W. Mellon Foundation and the Mary Flagler Cary Charitable Trust, the project, which began in April, currently involves 15 study plots in the Arboretum's research field off Lovelace Drive. Ten of the plots contain round, plastic open-top chambers that provide filtered ("clean") or unfiltered ("normal") air. Here pollution, particularly ozone, effects on naturally oc-

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Photo: Robin Parow-Place

Dr. David Karnosky, (right) discusses pollution testing at a chamber site with (left to right) Deane Wang, Associate in Research at Yale, Arboretum Trustee Ned Ames, and Herbert Bormann, Professor of Forest Ecology at Yale.

National Arboretum Requests Help in Seed Program with Japan

The Japanese flowering cherry, *Prunus serrulata,* a tree found in abundance in Japan, is of major interest to Americans concerned with improving the landscape of this country. Similarly, Cary Arboretum friends and neighbors with the American flowering dogwood, *Cornus florida,* possess a tree of great value to the Japanese.

An exchange program designed to provide dogwood seeds for Japan and cherry seeds for the U.S. is in progress under the auspices of the National Arboretum in Washington, D.C. Titled the "One Million Seed Exchange," seeds of the cherry have begun arriving in Washington as a result of a collecting program by the children of Japan's Uji region, a municipality located southeast of Kyoto, containing 23 towns and villages.

The seeds will re-introduce the Japanese flowering cherry tree, which has declined in number and form since its introduction to the U.S. in 1916.

According to a spokesperson for the program, the U.S. National Arboretum initiated a research/exploration/introduction program in the 1970's to document and replace all ornamental cherry trees in the United States. Recently, the Japanese have shown an intense interest in exchanging seeds from their beautiful spring flowering trees for seeds of our native ornamental tree.

Although dogwoods have been grown in Japan for a number of years, this exchange will supply seeds of the American dogwood to enable selection for the best form and vigor of the species in the various climatic regions of that country.

In a recent letter from the National Arboretum, Cary Arboretum staff members, "friends," and neighbors were asked to participate in the exchange program, with September and October the target months for seed collection.

According to Robert S. Hebb, Arboretum Horticulturist, *Prunus serrulata* is a true harbinger of spring, blossoming simultaneously with magnolias, daffodils, and forsythias.

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Gifford House Grounds Take On A New Look

A parking lot, walks and ramps – all essential to the development of the Gifford Garden – have been under construction this summer in preparation for continued work next year on the garden itself.

Islands constructed within the newly blacktopped 50-car parking lot will soon be planted with trees, lilacs, day lilies and Siberian iris. Throughout next summer, this "parking garden" will be the first display viewed by visitors to the Arboretum's Gifford House. Designed by Arboretum Horticulturist Robert Hebb, the planting scheme will welcome visitors in all seasons.

Under construction is a brick walk leading from the parking lot to the beautiful Gifford House – a Federal style brick structure built in 1817 and renovated in 1977 to become the Arboretum's Education and Visitor Center.

Like the Arboretum's Fern Glen and Rhododendron Dell, the Gifford Garden is arranged to accommodate the handicapped. Through late October, brick ramps leading up to the Gifford House and down to the Gifford Garden will be under construction.

"The parking lot, access walk and ramps are necessary elements to the total design of the Gifford Garden," said Mr. Hebb. "Once these are completed, work on the garden itself will start. Next summer, we will install the irrigation system, prepare soil for planting beds, and complete a path system that will connect various parts of the garden. After that, the real fun can begin when the plants are installed." Mr. Hebb, well known for his book *Low Maintenance Perennials,* plans to bring this book to life in the Gifford Garden and demonstrate that by proper selection and cultural methods, a perennial garden can be one of the most enduring, pleasurable and colorful forms of garden art.

Funded in part by both the Millbrook Garden Club, the Nine Partners Garden Club, and through generous contributions by friends and neighbors of the Arboretum, the garden is scheduled to open to the public in

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Yale and Cary

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curring vegetation and plantings of young Aspen clones are being monitored for growth and production along with environmental parameters such as air temperature, humidity, wind speed and soil moisture. Also being studied are five additional control plots with no chambers. These provide comparative data that allow the artificial conditions of the chambers to be accounted for. It is hoped that this type of an experimental set-up will begin to answer the perplexing questions relating to regional levels of air pollution and its danger to plants.

"We are just beginning to learn how ecosystems react to air pollutants," said Deane Wang, Associate in Research of Yale University. "The Arboretum is an excellent starting point for the study because it is representative of a non-urban area where rural levels of pollutions can be found."

During the next three years, the study sites will expand to include 18 chambers and a total of 27 separate test plots. After each growing season, vegetation from each of the plots will be examined, including observation of visible injury on leaves, and measurement of height and weight differences between plants exposed to filtered and unfiltered air.

The study is an outgrowth of a research program developed by Herbert Bormann, Oastler Professor of Forest Ecology at Yale University. Over the past several years, Dr. Bormann has collected evidence that levels of ambient air pollution effect agricultural and natural ecosystems over large regions of the United States, which, he says, has lowered agricultural and forest productivity.

Proof that air pollution is a regional problem, and not just a localized effect associated with urban areas, will be sought at the Cary Arboretum, and it is predicted that data collected as a result of this project will be of significant value to understanding regional pollution effects on a national level.

According to Dr. Karnosky, "There is very little information on tree effects of low-level, ambient air pollution on plant growth, especially in regard to trees. Thus, this study will be especially useful in evaluating the effectiveness of our national air quality standards."

Director's Note *by Dr. Willard W. Payne*

Arboretum Visitors, Challenges and Opportunities

The Arboretum grounds have grown markedly as a visitor attraction during the past three years, and the coming years will see visitation double and double again. In the 1981-82 fiscal year alone, ten thousand people participated in our formal and informal education programs, tours, and special events, or used our library services. At least half that many again utilized the grounds casually. This latter group includes many with specific goals, such as hikers, photographers, joggers, cross-country skiers and bird watchers, as well as persons simply taking an outing. The two thousand acres of managed landscape and the nearly twenty miles of public and private roadways offer uncountable opportunities for quiet pleasure.

The increase of Arboretum land use by the public presents many operational challenges, particularly during this time of simultaneous growth of Arboretum programs. Changes are being made as rapidly as possible to improve visitor accommodation without inhibiting ecological study. During this Newsletter period, new signs will be erected around and through the Arboretum to guide visitors, and to inform them of the rules necessary to protect the property, the facilities, and other visitors. This brings needs for new maps, new explanatory brochures, and more detailed information within and about the collections. A major change we hope to implement immediately is to move the Visitor Center from the Gifford House to the solar-heated Plant Science Building. This arrangement will have many functional advantages, and will enable us to meet visitors more directly and under circumstances that are more informative and satisfying than at present.

In order to make these changes possible, I ask for volunteer assistance by those who wish to make important, lasting contributions that will benefit untold numbers of visitors. Funds are not available from assured resources to support visitor programs beyond a minimal level, and, as in the past, we must rely on a strong volunteer program and the new energy volunteers bring to the Arboretum. You can play a key role in providing visitor services and acquainting people with the purpose and nature of this unique institution. In addition to those needed to assist in visitor services, volunteers are needed to help with preparation of trail guides and brochures, with collections management, and to lead groups through the displays so that newcomers get the most from them that they can. If you enjoy meeting people, if you would like to work with the staff on the collections, or if you have special skills that would be useful, please call Dr. Peter Dykeman, Coordinator of Volunteer Programs (914-677-5358).

The Cary Arboretum is dedicated to serving the public, accommodating the needs of students, staff, the living collections, and the study areas. Several multi-purpose, permanent displays have been developed with special regard for visitors. Most nearly complete is the Fern Glen, a beautiful and extensive collection of hardy ferns, mosses, wild plants, and ornamental species, set in the cool depths of the hemlock forest above the East Branch of the Wappingers Creek. The Rhododendron Dell, near the solar-heated Plant Science Building, will soon present a dazzling spring display of rhododendron species, many collected in the wild by our staff, together with their horticultural derivatives. Around the Gifford House Education Center, a very beautiful teaching and display garden of low maintenance, often exotic, perennials is taking shape. In the lowlands, nearly a mile of paired specimens form a long, sinuous Tree Allée, associated with the generic groupings, and leading to the greenhouse and nursery area.

These displays will generate increased public awareness of the Arboretum and or its programs and facilities. Daily, the public challenges the Arboretum to meet its needs for training, information, recreation, and a better understanding of the natural world upon which we all depend.

Through your help, we will continue to grow in the areas of environmental education and studies. Please consider your involvement with the Cary Arboretum, and the important part you can play in its future.

Please Note:

Applications for deer hunting on the Arboretum grounds will be accepted through October 15. All participants in the program must also apply for an antlerless permit. For an Arboretum hunting program application, send a self-addressed, stamped envelope to Ms. Julie Morgan, c/o the Cary Arboretum.

"Observations" to be Exhibited

"Observations," an exhibit of 25 drawings by Millbrook artist Elise Beecher, will open with a gallery reception on September 19, 1:30 to 4 p.m. in the Arboretum's Plant Science Building.

Using pencil and pen, Ms. Beecher presents both a critical and artistic view of vegetables, fruits and flowers. She has exhibited at the RCCA Gallery in Troy, the Barrett House in Poughkeepsie, the Millbrook School, and the SCAF Gallery in Sharon, Connecticut. Her exhibit at the Arboretum focuses on still-life studies recorded over a period of two years. Corn stalks, peppers, onions, day lilies and beets are among the subjects documented.

An art teacher at the Millbrook School, Ms. Beecher is also a freelance artist specializing in nature drawing, illustration and portraiture.

Visiting hours to the exhibit, which will be on display in the Plant Science Building, Route 44A through November 21, are weekdays, 8:30 a.m. to 4:30 p.m. and Sundays, 1:30 to 4:30 p.m.

Fifth Annual Fall-for-All Slated

Native American harvests will be the theme of this year's Fall-for-All festival —— an annual celebration of autumn held on the grounds of the Gifford House Education Center, Route 44A.

Scheduled for Sunday, October 3, noon to 5 p.m. (raindate October 10), the festival will include displays and demonstrations of spinning, weaving and dyeing, wood harvesting tools, wild foods, children's nature art and much more.

Featured will be native American foods, their history and uses. A luncheon highlighting these foods will be available throughout the day.

As always, favorite autumnal activities such as pumpkin carving, hay rides, and apple dunking will be included in the day's activities.

For more information on the Fall-for-All festival, call the Arboretum's Education Department, (914) 677-5358.

Gus Tillman Evaluates Mexican Program

Mexico City, the world's most populated city and one that suffers great ecological stress and pollution, will be under investigation by Arboretum Ecologist Dr. Robert (Gus) Tillman in a project funded by Mexico's National Government.

Appointed by the United Nations Center for Human Settlements (HABITAT), Dr. Tillman will be the Chief Technical Advisor for the project, which is designed to develop and implement an environmental assessment methodology.

According to the Population Crisis Committee of Washington, D.C., Mexico City now contains 14 million people and is growing at a rate of five percent a year, two percentage points higher than the national growth rate. It is predicted that by the year 2000, its population will surpass 30 million.

"Our intent is to assess the City's pollution problems and recommend programs for urban planning," says Dr. Tillman. The first phase of the project will focus on water resources for Mexico City – a problem on which the Mexican government has spent millions of dollars over the past four years. The methodology used to identify specific problems with the City's water system will be used to pinpoint other types of urban impacts on the environment.

The project will continue through June, 1983, and if successful, the techniques developed will be extended to Guadalajara and Monterrey, Mexico's second and third largest cities, respectively.

Dr. Tillman has conducted environmental assessments under several different sponsorships and guidelines. His involvement with UNESCO (United Nations Education, Scientific and Cultural Organization) has brought attention to the Cary Arboretum from leading environmentalists throughout the world.

National Arboretum

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Most ornamental cherry stocks cultivated in this country for many years are heavily infested with virus diseases, and the vigor of our plantings has declined markedly.

"The need for re-introduction from abroad of new, healthy plants of wild origin is apparent," he said, "and the National Arboretum program could truly enhance the beauty of our gardens for years to come. Cary Arboretum friends have a unique opportunity to contribute to the success of this program, as well as to insure that future generations of Japanese will be able to enjoy the beauty of our much loved flowering dogwood."

Those who would like to participate in the program are asked to identify their dogwood seeds by color of the blossom (pink or white) and indicate the exact location collected. Also, please note whether your seed source was a wild specimen growing naturally in the woods, or was a cultivated plant from a yard or roadside. Deliver seeds to the Arboretum's greenhouse complex, Route 82. There they will be cleaned and prepared for mailing to the National Arboretum, and subsequent shipment to Japan.

The following information, provided by the National Arboretum, will help first-time collectors harvest their seeds:

Cornus florida L. – Is a native of the Eastern United States. The small deciduous tree is grown for its flower, fruit, foliage, and twig color. Its wood is hard and heavy and is used for charcoal. Its height at maturity is from 20 to 40 feet.

Flowering/ Fruiting – Flowers March to May
Fruit ripens September; red, fleshy with a hard stone covering the seed
Seed disperses October and November by birds and animals

Seed Bearing – Minimum seed-bearing age – 6 years
Intervals between large seed crops – 1-2 years
Fruit ripeness color – dark red

Collection of Fruits – To reduce losses to birds, fruit should be collected as soon as ripe by stripping or shaking the branches. Each batch of fruit should be identified as to location, wild or cultivated.

Extraction/ Storage of Seed – Stones can be readily extracted from the fruit by macerating the fruit in water and allowing the pulp and empty stones to float away.

For more information on the "One Million Seed Exchange," call the Arboretum's Public Relations Department (914) 677-5343.

Gifford House

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1985. Featured will be a sunken octagonal garden, fountain and small pool, viewing terraces, a garden house for various activities, a pergola for vines, and numerous beds to display both sun-loving and shade-loving perennials.

Several hundred different plants will be shown, along with ways to combine them to achieve harmony of color and contrast of shape and texture. The principal color will come from such well-known favorites as peonies, irises, day lilies, hosta, bergenia, monkshood, astilbe, yarrow and sedum, to name but a few.

At the Garden

Something Special for Members

Autumn at the beautiful Enid A. Haupt Conservatory at the New York Botanical Garden in the Bronx will be more spectacular than ever this year due to Kiku-Ka Ten: An Exhibition of Japanese Chrysanthemums.

Visitors to the Conservatory will enjoy a rare opportunity to view a traditional Japanese art form when the 2,000-plant chrysanthemum floral exhibit goes on display beginning October 23. The exhibit will contain more than 100 rare chrysanthemum varieties and will feature single, three, and seven stem cultures along with cascades and the dramatic thousand-bloom culture. Funded in part by the Japan Foundation and the Japanese World Exposition Commemorative Fund, the exhibit has been designated as an official activity of the Tokyo-New York sister city relationship.

Of special interest to "Friends of the Arboretum" is a Members' Day on October 27. In addition to free parking at the Garden and free admission to the Kiku exhibit, members will be treated to a tea ceremony between 4:30 and 8:00 p.m., sponsored by Japan Airlines.

The Enid A. Haupt Conservatory is open Tuesday through Sunday, 10 a.m. to 5 p.m. A café located in the Hanging Garden Room is open for light lunches and snacks on Wednesdays and weekends, 11 a.m. to 4 p.m., and a snack bar/restaurant is operated every day in the Snuff Mill.

Mozart Comes To Cary

A series of two concerts featuring works of Wolfgang Amadeus Mozart, performed by the Northeastern Arts Ensemble, will be held in the Arboretum's Plant Science Building on September 26 and October 31.

Both concerts will feature Mozart's rarely performed wind and string chamber music, including Quartet in F Major for Oboe and Strings, K. 370, and String Quartet No. 20 in D Major, K. 499.

Founded and directed by Mr. Paul Gallo, the Northeastern Arts Ensemble is a non-profit organization dedicated to developing cultural consciousness in the Hudson Valley area. Mr. Gallo, who has received two Fellowship Awards to Tanglewood, performs regularly with the American Symphony, Clarion Orchestra, Brooklyn Philharmonia and the Mostly Mozart Festival Orchestra. He is also the director of the Hudson Valley Philharmonic Youth Orchestra Winds, and the Vassar College Wind Ensemble.

Funded in part by a grant from the Dutchess County Arts Fund, the concerts will once again bring classical music to the architecturally beautiful and acoustically excellent Plant Science Building.

Both concerts will begin at 4 p.m. Ticket prices for each performance are $6.00 for adults, $4.00 for members and senior citizens, and $2.50 for children. Please call (914) 677-5343 for additional information.

Around the Arboretum

At a Glance

September 16:
Day trip to "Sunnyside," the home of Washington Irving, and to an evening dinner theatre in Elmsford, New York.
September 19:
Gallery reception 1:30-4 p.m. for "Observations," an art exhibit by Elsie Beecher in the Plant Science Building. Gallery hours: Weekdays, 8:30 a.m. to 4:30 p.m.; Sundays, 1:30 to 3:30 p.m. Exhibit runs through November 21.
September 26:
"Music at the Arboretum" featuring an all Mozart program at 4:00 p.m. in the Plant Science Building. Call 677-5343 for information.
September 27:
Day trip to the Norman Rockwell Museum, the Red Lion Inn and the Berkshire Garden Center.
October 3:
Fall-for-All festival, noon to 5 p.m. on the grounds of the Gifford House Education Center, Route 44A.
October 17:
Arboretum Slide Lecture Series: "Managing White-Tailed Deer – Is Hunting Necessary?" by Arboretum Coordinator of Wildlife Resources Jay McAninch, 3:00 p.m. at the Gifford House.
October 21:
Day trip to the Mohonk Mountain House and Mohonk Preserve.
October 24:
Arboretum Slide Lecture Series: "Summer in Cimarron" by Arboretum Coordinator of Education Dr. Peter Dykeman, 3:00 p.m. at the Gifford House.
October 31:
"Music at the Arboretum" featuring an all Mozart Program at 4:00 p.m. in the Plant Science Building. Call 677-5343 for information.
November 7:
Arboretum Slide Lecture Series: "Guatemala" by Arboretum Ecologist Dr. Gus Tillman, 3:00 p.m. at the Gifford House.
Tours . . .
through the greenhouse complex and solar-heated Plant Science Building are conducted on Wednesdays and Sundays, 1:30 to 3:30 p.m.

Cary Gift Shop
Hours: Tuesday through Friday 11 a.m.-4:30 p.m.
Weekends: 1:30-4:30 p.m.
Visa and Master Card accepted.
Unless otherwise noted, call the Gifford House Education Center (914) 677-5358 for further information on the above.
*Note: This list does not include courses offered during September and October at the Gifford House Education Center. Call 677-5358 for a separate listing.

Skiers Take Note:

Members of the "Friends of the Cary Arboretum" wishing to take advantage of cross-country skiing privileges at the Arboretum this winter please take note:

A pre-ski seminar is mandatory for those who want to ski on the Arboretum grounds. It will be held at 10 a.m. on Saturday, December 11 at the Plant Science Building, Route 44A.

The one-hour program, conducted by Arboretum Education Coordinator Dr. Peter Dykeman, will include an outline of skiing rules and regulations, guest privileges, and training about Arboretum winter land use. To protect the plantings and projects that cannot be disturbed, this information is considered essential, and no permit will be issued to anyone who does not register and attend.

To register for the program, which is offered free of charge, please call Mrs. Marcia Davis, (914) 677-5358.

Think Christmas!

Do something different this Christmas season and join in the fun at the Cary Arboretum by participating in the second annual display of Christmas trees decorated with natural ornaments.

Straw flowers, sea shells, Queen Anne's lace, herbs and spices, winter fruits and berries, feathers and citrus fruits are among the suggested natural materials that can be used for decorations.

Individuals, garden clubs, and organizations are welcome to participate in the display, which will be on exhibit beginning the week of December 6 in the lobby of the Arboretum's solar-heated Plant Science Building, Route 44A.

For more information on this event, please contact Mrs. Jeanette Gorman, (914) 677-5343.

Bird Seed Savings Day

"Friends of the Arboretum" will soon be receiving order forms for the next Bird Seed Savings Day – a program developed to provide high quality seed at competitive prices.

There has been no price increase on any of the variety of seeds offered. Orders must be made by October 8 through the Arboretum's Gifford House. Seed will be ready for pick up on October 23.

Call (914) 677-5358 for additional information.

Text by
Robin Parow-Place

THE CARY ARBORETUM
of
THE NEW YORK
BOTANICAL GARDEN

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